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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,789	04/05/2001	Masanori Suzuki	64753 CCD	4081

7590

01/24/2003

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EXAMINER

NOTE, JANIS L

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 01/24/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/826,789

Applicant(s)

SUZUKI et al

Examiner

J. DOTE

Group Art Unit

1756

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 11/12/02
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-22, 30, 32-40 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☒ Claim(s) 8, 30, 39 is/are allowed.
- ☒ Claim(s) 1-7, 9-22, 32-38, 40 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some\* ☐ None of the:
  - ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

Office Action Summary

1. The examiner acknowledges the cancellation of claims 23-29 and 31, and the amendments to claims 1-10, 13, 30, 32, and 39 filed in Paper No. 6 on Nov. 12, 2002. Claims 1-22, 30, and 32-40 are pending.

The substitute specification filed on Nov. 12, 2002, has been entered.

2. The objection to the specification set forth in the office action mailed on May 15, 2002, Paper No. 5, paragraph 3, has been withdrawn in response to the replacement paragraphs at pages 41, 71, and 72, of the specification, filed in Paper No. 6.

The rejection of claims 10-12 under 35 U.S.C. 101, set forth in Paper No. 5, paragraph 7, has been withdrawn in response to the amendment to claim 10.

The rejection of claims 13-22 under 35 U.S.C. 102(b) over US 5,805,965 (Tsuda), set forth in Paper No. 5, paragraph 12, has been withdrawn in response to the amendment to claim 13. Amended claim 13 now positively recites that the image forming apparatus comprises a developing unit which includes a particular two-component developer. For the reasons set forth by applicants in Paper No. 6, page 9, Tsuda does not disclose an image forming apparatus comprising the two-component developer recited in the instant claims.

The rejection of claims 1-3 and 5-7 under 35 U.S.C. 102(b) over European Patent 0936507 A2 (EP'507), and the rejections under 35 U.S.C. 103(a) of claims 4, 23-25, 27-29, 32-34, and 36-38 over EP'507, alone or combined with the other cited reference, set forth in Paper No. 5, paragraphs 13-15, have been withdrawn in response to the cancellation of claims 23-25 and 27-29 and the amendments to claims 1 and 32, which now require a two-component developer comprising a particular toner and a magnetic carrier. As noted by applicants in Paper No. 6, pages 10-11, EP'507 does not disclose a two-component developer comprising a toner and a magnetic carrier as is now required in the instant claims.

The rejections under 35 U.S.C. 103(a) of claims 1-3, 5, 6, 9, 23-25, 27, 28, 31-34, 36, 37, and 40 over Japanese Patent 5-66609 (JP'609) combined with Diamond, Handbook of Imaging Materials, pp. 162-165, set forth in Paper No. 5, paragraphs 16 and 17, have been withdrawn in response to the cancellation of claims 23-25, 27, 28, and 31, and the amendments to claims 1 and 32, as described supra. As noted by applicants in Paper No. 6, page 11, JP'609 does not teach a two-component developer, but discloses only "one component developing."

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7, 10-22, and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(1) Claims 7, 20, and 38 are indefinite in the phrase "toner has a saturation magnetization of 10 emu/g to 25 emu/g" because it is not clear under what conditions the saturation magnetization was determined (e.g., magnetic field). The instant specification does not disclose the conditions under which the saturation magnetization is determined. As shown in European Patent 0936507 A2 (EP'507), the value of the saturation magnetization appears to change with the strength of the magnetic field. EP'507 shows that a black magnetic toner has a saturation magnetization of 32.6 emu/g in a magnetic field of 10 kOe, and a saturation magnetization of 25.9 emu/g in a magnetic field of 1 kOe. EP'507, page 17, lines 46 and 47.

(2) Claims 10-12 are indefinite in the phrase "development unit capable of changing a state of incorporation of said toner in said two-component developer on the developer bearing member by changing a state of contact of said two-component developer with said toner in accordance with changes in concentration of

said toner in said two-component developer on said developer bearing member." It is not clear what is meant by the phrase "changing the incorporation state of" the magnetic toner because the magnetic toner is already incorporated or is a part of the two-component developer. It is further not clear how the two-component developer changes contact with the magnetic toner when the magnetic toner is a part of the two-component developer. It is also not clear how a change in contact is related to a change in the concentration of the toner in the two-component developer.

(3) Claims 13-22 are indefinite in the phrase "development unit being capable of changing a state of incorporation of said toner in said two-component developer on the developer bearing member by changing a state of contact of said two-component developer with said toner in accordance with changes in concentration of said toner in said two-component developer on said developer bearing member" for the same reasons discussed in item (2) supra.

Applicants' arguments filed in Paper No. 6 have been fully considered but they are not persuasive.

(1) Applicants assert that the saturation magnetizations were determined at a magnetic field of 10 KOe. Applicants allege that it is conventional in the art to determine magnetic saturations at a magnetic field of 10 KOe. Applicants provide

copies of three US patents to support their allegation. Applicants conclude that because 10 KOe is a conventional field for determination of saturation magnetization of magnetic particles, a person having ordinary skill in the art would have known that the saturation magnetization recited in the instant claims refers to a saturation magnetization determined at 10 kOe.

However, the instant specification does not disclose at what magnetic field strength the saturation magnetization is determined. Applicants' submitted evidence of three US patents is insufficient to show that saturation magnetization is conventionally determined at a magnetic field of 10 KOe. As discussed in the rejection above, EP'507 reports toner saturation magnetizations at two different magnetic fields, 10 kOe and 1 kOe. Furthermore, as shown in US 2002/0090562 A1 (Sasaki), which is assigned to the same assignee, the toner saturation magnetization is determined at 1000 Oe. See Sasaki, reference claim 5.

In view of the evidence on the present record, because the specification does not disclose the magnetic field used to determine the saturation magnetization, the rejection stands.

(2) Applicants argue that the meaning of the "capable of" recital is fully understood from the description in the specification at pages 21-23 and 46-54. Applicants also refer to the disclosure in Tsuda, cols. 13-15.

The instant specification at pages 21-23 and 46-54 merely describes a particular developing unit comprising particular components that "is capable of changing the incorporation state of the toner into the developer on the . . . developer bearing member, with the state of the contact of the developer and the toner being changed, in accordance with the changes in the concentration of the toner in the developer on the developer bearing member." The unit comprises: a development sleeve 15 which carries a two-component developer comprising a magnetic carrier and a magnetic toner; a first regulating member 17 which regulates the amount of the two-component developer on the development sleeve 15 by scraping developer therefrom; a developer holding container 16 for holding the scraped off developer from the development sleeve 15; a toner container 19 adjacent to the developer holding container 16 which supplies magnetic toner to the development sleeve 15; and a second regulating member 23 which is attached to the developer holding container 16 and is disposed to form a gap between the free-end of the regulating member and the development sleeve 15 to regulate the flow of the two-component developer on the development sleeve 15 into the toner holding container 16. See Fig. 1. The instant specification discloses that when the concentration of the toner in the two-component developer on the



development sleeve 15 reaches a predetermined value, the second regulating member 23 prevents the two-component developer on the development sleeve 15 from flowing in the toner holding container 16 from supplying additional magnetic toner to the two-component developer. In other words, the second regulating member 23 prevents the replenishment of magnetic toner to the two-component developer on the development sleeve 15 with new or additional magnetic toner. The instant claims do not recite regulating or changing the addition of additional magnetic toner to the two-component developer on the developer bearing member as disclosed in the instant specification. Rather, the instant claim recite "changing a state of incorporation of said toner in said two-component developer on the developer bearing member by changing a state of the contact of said two-component developer with said toner in accordance with changes in concentration of said toner in said two-component developer on said developer bearing member." Applicants cannot read limitations from the specification into the claims.

5. The recitation "toner contains carbon black on the inside thereof, the amount of said carbon black is in the range of 6 wt.% or less" in instant claims 5, 18, and 36 is interpreted to mean that the toner comprising the magnetic material surface-

coated with a coloring agent further comprises carbon black in an amount of 6 wt% or less. This definition is consistent with the disclosure at page 26, lines 16-19, of the specification, which discloses that "[t]he best is that no carbon black is contained inside the toner from the viewpoint of the occurrence of the fogging of the background." Applicants have agreed to the examiner's definition. See Paper No. 6, page 9, lines 10-13. The following rejections have been made based on this definition.

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-3, 5-7, 32-34, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,733,699 (Asanae' 699) combined with European Patent 0936507 A2 (EP' 507).

Asanae' 699 discloses a two-component developer that is within the compositional limitations recited in the instant claims, but for the particular magnetic material surface coated with a pigment as recited in the instant claims. Asanae' 699's two-component developer comprises a magnetic carrier and a chargeable magnetic toner. The magnetic carrier and magnetic toner are present in a weight ratio of magnetic carrier to magnetic toner between 10:90 to 90:10. The magnetic toner comprises a binder resin and a magnetic powder and has a volume

resistivity of not less than  $10^{13} \Omega \cdot \text{cm}$ . Col. 2, lines 25-29.

The magnetic toner preferably comprises 20 to 60 wt% of magnetic powder. Col. 3, lines 14-15. Asanae'699 further discloses an image forming apparatus comprising a developer cleaner 5 comprising said magnetic toner and a developer carrier member 8 carrying the two-component developer. See Fig. 2, and col. 5, lines 31-35 and 62-65.

Asanae'699 discloses that its two-component developer can form a magnetic brush that can develop an electrostatic latent image on an image carrier to form a toner image and recover toner remaining on the surface of an image carrier after the toner image is transferred to a recording material. Thus, clear and high quality images can be subsequently obtained. Col. 1, lines 15-22; and col. 4, lines 36-48.

As discussed supra, Asanae'699 does not disclose the use of magnetic material coated with a coloring agent as recited in the instant claims. However, Asanae'699 does not limit the type of magnetic particles used in its magnetic toner. Asanae'699 discloses that the magnetic powder is "preferably formed to have an average particle size of between 0.1 to 3  $\mu\text{m}$ ." Col. 3, lines 4-5.

EP'507 discloses black magnetic composite particles comprising magnetite particles surface coated with carbon black,

which are within the compositional limitations recited in instant claim 3. See Table 6 at page 32, black magnetic composite particles example 12. The black magnetic composite particles have an average particle size of 0.24  $\mu\text{m}$ . The average particle size of 0.24  $\mu\text{m}$  is within the range of 0.20 to 0.40  $\mu\text{m}$  recited in instant claim 6 and is also within the preferred range of 0.1 to 3  $\mu\text{m}$  disclosed by Asanae'699. EP'507 exemplifies a magnetic toner comprising a binder resin and 40 wt% of said black magnetic composite particles. See col. 20, lines 45-52, and Table 7 at page 35, toner example 20. The magnetic toner has a volume resistivity of  $2.6 \times 10^{14} \Omega \cdot \text{cm}$  and an average particle size of 9.8  $\mu\text{m}$ . See Table 7 at page 36, toner example 20. The amount of 40 wt% of black magnetic composite particles is within the range of 20 to 60 wt% taught by Asanae'699. The volume resistivity is within range of not less than  $10^{13} \Omega \cdot \text{cm}$  required by Asanae'699. The magnetic toner also has a saturation magnetization of 22.2 emu/g at 1 kOe, which is within the range of 10 to 25 emu/g recited in instant claim 7. See Table 7 at page 37, toner example 20. EP'507 discloses that its black magnetic composite particles have excellent fluidity, blackness, and dispersibility in a binder resin. Page 3, lines 31-32. EP'507 further discloses that toners comprising its carbon black surface coated magnetic particles have excellent fluidity and blackness. The toners provide high image quality images and can be used in high

speed copiers. Page 3, lines 27-30 and 33-35. The toners also have a volume resistivity of usually not less than not less than  $10^{13} \Omega \cdot \text{cm}$ , which is the volume resistivity required by Asanae'699. EP'507, page 12, line 58, to page 13, line 1.

EP'507 does not disclose that its magnetic toner can be used in a two-component developer comprising a magnetic carrier as recited in the instant claims and disclosed by Asanae'699. However, as discussed supra, EP'507's magnetic toner meets the limitations of the magnetic toner required by Asanae'699 for two-component developers. EP'507 further teaches the its magnetic toner has excellent blackness and fluidity.

Thus, it would have been obvious for a person having ordinary skill in the art to use EP'507's magnetic toner in the two-component developer disclosed by Asanae'699, because that person would have had a reasonable expectation of successfully obtaining a two-component developer and an image forming apparatus comprising said two-component developer having the properties disclosed by Asanae'699 and providing high quality black toned images.

8. Claims 4 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanae'699 combined with EP'507, as applied to claims 1 and 32 above, further combined with additional teachings in Asanae'699 and EP'507.

The combined teachings of Asanae' 699 and EP' 507 render obvious a two-component developer and an image forming apparatus as described in paragraph 7 above, which is incorporated herein by reference.

Neither Asanae' 699 nor EP' 507 exemplifies a magnetic toner comprising magnetic powder in an amount of 10 to 30 wt% as recited in the instant claims.

However, as discussed in paragraph 7 above, Asanae' 699 discloses that its magnetic toner preferably comprises 20 to 60 wt% of magnetic powder. Col. 3, lines 14-15. The amount of 20 wt% is within the range recited in the instant claims. EP' 507 discloses that the amount of binder resin in its black magnetic toner is "usually 50 to 900 parts by weight, preferably 50 to 400 parts by weight based on 100 parts by weight" of the magnetic particles. EP' 507, page 12, lines 41-42. In other words, the amount of EP' 507's black magnetic composite can be about 10 to 68 wt%, preferably about 20 to 68 wt%, based on the weight of the magnetic toner. The lower preferred amount of 20 wt% is within the range recited in the instant claims and within the preferred range disclosed by Asanae' 699.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Asanae' 699 and EP' 507, to adjust, through routine experimentation, the amount of carbon black surface coated magnetic particles in EP' 507's toner

example 20, such that the amount is 20 wt% based on the total weight of the toner, because that person would have had a reasonable expectation of successfully obtaining a two-component developer and an image forming apparatus having the properties disclosed by Asanae'699 and EP'507.

9. Claims 9 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanae'699 combined with EP'507, as applied to claims 1 and 32 above, further combined with US 5,866,289 (Asanae'289).

The combined teachings of Asanae'699 and EP'507 render obvious a two-component developer and an image forming apparatus as described in paragraph 7 above, which is incorporated herein by reference.

Neither reference discloses that the magnetic toner has a volume mean particle size of 2.5 to 10  $\mu\text{m}$  as recited in the instant claims.

Asanae'289 teaches that to produce images with a high resolution, the volume average particle size of magnetic toners in a two-component developer is 5 to 15  $\mu\text{m}$ , preferably 5 to 12  $\mu\text{m}$ . Col. 2, lines 51-53. The particle size of 5  $\mu\text{m}$  is within the range recited in the instant claims.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Asanae'289, to

adjust, through routine experimentation, the particle size of the magnetic toner disclosed by EP'507, such that the resulting magnetic toner has a volume average particle size of 5  $\mu\text{m}$ , and to use the resultant magnetic toner in the developer disclosed by Asanae'699, because that person would have had a reasonable expectation of successfully obtaining a two-component developer and an image forming apparatus having the benefits disclosed by Asanae'699 and EP'507 and providing black toned images with improved resolution.

10. The claim language recited in instant claims 10 and 13 is interpreted by the examiner to mean that the developing unit regulates the concentration of the magnetic toner in the two-component developer which is carried on a developer carrier by adding or not adding additional magnetic toner to the two-component developer on the developer carrier. The following reactions have been made based on the examiner's interpretation.

11. Claims 10-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanae'699 combined with EP'507, as applied to claims 1-3, 6, and 7 above, further combined with US 5,771,426 (Oka).



Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asanae'699 combined with EP'507, as applied to claim 4 above, further combined with Oka.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asanae'699 combined with EP'507 and Asanae'289, as applied to claim 9 above, further combined with Oka.

The combined teachings of Asanae'699 and EP'507 render obvious an image forming apparatus as described in paragraph 7 above, which is incorporated herein by reference.

The combined teachings of Asanae'699 and EP'507 render obvious an image forming apparatus as described in paragraph 8 above, which is incorporated herein by reference.

The combined teachings of Asanae'699, EP'507, and Asanae'289 render obvious an image forming apparatus as described in paragraph 9 above, which is incorporated herein by reference.

None of the references discloses the use of a developer unit having the property recited in the instant claims.

As discussed in paragraph 7, supra, Asanae'699 discloses an image forming apparatus comprising a container comprising the magnetic toner and a developer bearing member. Asanae'699 does not disclose a developing unit as recited in the instant claims.

Oka discloses a developing unit that meets the limitations recited in instant claims 10 and 13. Oka's developing unit 2

comprises (1) a developer carrier 4 which conveys a two-component developer comprising a magnetic toner and a magnetic carrier; (2) a regulating member 6 for regulating the amount of the two-component developer carried on the developer carrier 4 by scraping off the developer therefrom; (3) a developer storing container 10 for storing the scraped-off developer by the first regulating member; (4) a developer holding container 11; and (5) a toner hopper 8 storing fresh magnetic toner 3a to be replenished into the two-component developer on the developer carrier 4. The toner hopper 8 is adjoined to said developer holding container 10 at an upstream side of the container 10 in a direction in which the developer carrier 4 conveys the two-component developer. The toner hopper 8 comprises an opening 8a contacting the two-component developer on the developer carrier 4 and forming a first toner layer, and the developer existing in the container 10 and forming a second developer layer 3-2. The two-component developer 3-1 forming a first layer on the developer carrier 4 is conveyed to the developing position to develop a latent electrostatic image on the drum 1. The developer 3-2 forming a second layer of developer and removed by the regulating member 6 moves within the container 10 to the opening 8a at a position remote from the developer carrier 4 due

to its own internal pressure and weight. The volume of the second developer layer 3-2 varies in accordance with the toner concentration in the developer on the developer carrier 4.

"Specially, when the toner concentration is high, the area over the developer 3-1 on the sleeve 4 and to be conveyed to the developing position in a great ratio contacts the fresh toner 3a is reduced. As a result, the amount of toner 3a to be taken by the developer 3-1 is reduced. Conversely, when the toner concentration is low, the above area is increased with the result that the toner 3a is taken into the developer 3-1." Col. 8, line 31, to col. 9, line 55; and Fig. 1. Accordingly, Oka's developing unit has the property recited in instant claims 10 and 13. Oka further discloses an imaging forming method comprising the steps of developing an electrostatic latent image on image carrier drum 1 with the two-component developer carried on the developer sleeve 4 in the developing unit 2. See Fig. 1.

Oka discloses that its developing unit is capable of sufficiently charging the magnetic toner in a two-component developer even when used in a high-speed image forming apparatus. The developing unit is also capable of providing toned images with stable image densities without background contamination. Col. 6, lines 3-13.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Oka, to use Oka's developing unit in the image forming apparatus rendered obvious over the combined teachings of Asanae'699 and EP'507, or over the combined teachings of Asanae'699, EP'507, and Asanae'289, because that person would have had a reasonable expectation of successfully obtaining an image forming apparatus and an image forming method that are capable of stably providing images without decrease in image density and without background contamination.

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. The following rejections are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

14. Claims 1-7 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 09/982,877 (Application'877) in view of Diamond, Handbook of Imaging Materials, pp. 165-168.

Application'877 claims a two-component developer comprising a magnetic carrier and a magnetic toner comprising a binder resin and magnetic particles coated with carbon black, wherein the magnetic toner comprises said magnetic particles in an amount of 10 to 30% by weight. See reference claim 2. The two-component developer recited in reference claim 2 meets the developer recited in instant claims 1-5. Application'877 requires that the magnetic particles have an average particle size of 0.2 to 0.4  $\mu\text{m}$ , which meets the range of 0.2 to 0.4  $\mu\text{m}$  recited in instant claim 8. Application'877 also requires that the toner have a saturation magnetization between 10 and 30 emu/g at 1000 Oe. See reference claim 5. The range of 10 to 30 emu/g overlaps the range of 10 to 25 emu/g recited in instant claim 7, and the lower endpoint 10 emu/g is within the range of 10 to 25 emu/g.

The claims of Application'877 do not require that the magnetic toner comprise a binder resin as recited in instant claim 1. However, the use of a binder resin in a toner is well-known in the art. Diamond discloses that the role of a binder resin in a toner is to bind the pigment to the paper or transparency material to form a permanent image. "This is typically done by selecting a polymer that will melt at a reasonable temperature when heat is applied in any of a number of ways or one that can be forced into the paper fibers at high pressure without additional heat." Diamond further lists common toner binder resins in Table 4.1. See Diamond, pp. 165-168.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in the claims of Application'877 and the teachings in Diamond, to incorporate a binder resin in the magnetic toner of the two-component developer recited in the claims of Application'877, because that person would have had a reasonable expectation of successfully obtaining a two-component developer capable of being used in an electrophotographic imaging apparatus or process to form permanent toned images on paper or a transparency.

15. Claim 9 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application

No. 09/982,877 (Application'877) in view of Diamond, Handbook of Imaging Materials, pp. 165-168, further in view of Asanae'289.

The subject matter recited in the claims of Application'877 combined with the teachings of Diamond render obvious a two-component developer as described in paragraph 14 above, which is incorporated herein by reference.

Application'877 further requires that the magnetic toner have an average particle size of 5 to 15  $\mu\text{m}$ . See reference claim 10. However, reference claim 10 does not identify the particle size as a volume-average particle size as recited in the instant claim.

Asanae'289 teaches that to produce images with a high resolution, the volume average particle size of magnetic toners in a two-component developer is 5 to 15  $\mu\text{m}$ , preferably 5 to 12  $\mu\text{m}$ . Col. 2, lines 51-53. The particle size of 5  $\mu\text{m}$  is within the range recited in the instant claims.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in claim 10 of Application'877 and the teachings of Asanae'289, to adjust, through routine experimentation, the particle size of the magnetic toner recited in the claims of Application'877, such that the resulting magnetic toner has a volume average particle size of 5  $\mu\text{m}$ , and to use the resultant magnetic toner in the developer rendered obvious over the subject matter recited in the

claims of Application'877 combined with the teachings of Diamond, because that person would have had a reasonable expectation of successfully obtaining a two-component developer that provides permanent black toned images with improved resolution.

16. Claim 13-18 and 32-36 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 09/982,877 (Application'877) in view of Diamond, Handbook of Imaging Materials, pp. 162-168.

Application'877 claims an image formation apparatus comprising: (1) a toner container comprising a magnetic toner configured to supply the magnetic toner to a developer carrier; (2) a developer container comprising a magnetic carrier configured to carry the magnetic toner on a surface thereof and in which the toner is mixed with the magnetic carrier to form a two-component developer; (3) a first regulating member configured to control a volume of the two-component developer transported by the developer carrier; and (4) a second regulating member arranged to border a region with the developer carrier, and configured to regulate how much magnetic toner is transferred to the developer container, wherein the second regulating member changes a mixing ratio of the magnetic carrier and magnetic toner, according to a change of magnetic toner concentration of



the two-component developer on the developer carrier. The magnetic toner comprises magnetic particles coated with carbon black. The magnetic particles coated with carbon black are within the magnetic particle compositional limitations recited in instant claims 16 and 34. See reference claim 19.

The image forming apparatus recited in reference claim 19 has the property recited in instant claim 13. The second regulating member (4) regulates the amount of magnetic toner in the toner container (1) transferred to the developer container, according to a change of magnetic toner concentration of the two-component developer on the developer carrier.

Reference claim 19 of application '877 does not positively require that the image forming apparatus comprise a developer carrier. However, reference claim 19 recites the interaction of a developer carrier with components (1) through (4). The use of a developer carrier to carry the two-component developer is well-known in the art of electrophotography. See Diamond, pages 162-163 and Figs. 4.2 and 4.3. Diamond shows a typical two-component developer housing and a strand of magnetic brush comprising a two-component developer on a developer roll, where the magnetic toner in the magnetic brush develops the electrostatic latent image on a photoreceptor.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in

reference claim 19 of Application'877 and the teachings in Diamond, to incorporate a developer carrier in the image forming apparatus recited in reference claim 19 because that person would have had a reasonable expectation of successfully obtaining an image forming apparatus capable of developing an electrostatic latent image with the magnetic toner of a two-component developer.

Reference claim 19 does not require that the magnetic toner comprise a binder resin as recited in the instant claims. Nor does reference claim 19 require that the coated magnetic particles be present in the amounts recited in instant claims 14, 17, 32, and 35. However, the use of a binder resin in a magnetic toner is well-known in the art as shown by Diamond. The discussion of Diamond in paragraph 14 above is incorporated herein by reference. In addition, reference claim 2 of Application'877 requires that the coated magnetic particles be present in amount between 10 to 30 % by weight which is within the range recited in instant claims 14, 17, 32, and 35.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in claim 2 of Application'877 and the teachings in Diamond, to use the carbon black coated magnetic particles in an amount of 10 to 30 wt% and to incorporate a binder resin in the magnetic toner of the two-component developer recited in reference claim 19 of

Application'877, because that person would have had a reasonable expectation of successfully obtaining an image forming apparatus capable of forming permanent black toned images on paper or a transparency.

17. Claims 19, 20, 37, and 38 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 09/982,877 (Application'877) in view of Diamond, Handbook of Imaging Materials, pp. 162-168.

The subject matter recited in reference claims 2 and 19 of Application'877 combined with the teachings in Diamond render obvious an image forming apparatus as described in paragraph 16 above, which is incorporated herein by reference.

Reference claims 2 and 19 do not require that the magnetic toner have a saturation magnetization of 10 to 25 emu/g as recited in instant claims 20 and 38. Nor do the reference claims require that the coated magnetic particles have an average particle size of 0.20 to 0.40  $\mu\text{m}$  recited in instant claims 19 and 37.

However, reference claim 8 requires that the magnetic particles have an average particle size of 0.2 to 0.4  $\mu\text{m}$ , which meets the range of 0.2 to 0.4  $\mu\text{m}$  recited in instant claim 6. Reference claim 5 requires that the toner has a saturation

magnetization between 10 and 30 emu/g at 1000 Oe. The range of 10 to 30 emu/g overlaps the range of 10 to 25 emu/g recited in instant claim 7, and the lower endpoint 10 emu/g is within the range of 10 to 25 emu/g.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in claims 5 and 6 of Application'877, to adjust, through routine experimentation, the average particle size of the carbon black coated magnetic particles and saturation magnetization of the magnetic toner, such that the resulting magnetic particles have an average particle size of 0.2 to 0.4  $\mu\text{m}$  and the resulting magnetic toner has a saturation magnetization of 10 emu/g, and to use the resultant magnetic toner in the two-component developer in the image forming apparatus rendered obvious over the subject matter recited in reference claims 2 and 19 of Application'877 combined with the teachings in Diamond, because that person would have had a reasonable expectation of successfully obtaining an image forming apparatus capable of forming permanent black toned images on paper or a transparency.

18. Claims 22 and 40 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application

No. 09/982,877 (Application'877) in view of Diamond, Handbook of Imaging Materials, pp. 162-168, further in view of Asanae'289.

The subject matter recited in claims 2 and 19 of Application'877 combined with the teachings of Diamond render obvious an image forming apparatus as described in paragraph 16 above, which is incorporated herein by reference.

Reference claims 2 and 19 do not require that the magnetic toner to have an average volume particle size as recited in instant claims 22 and 40.

However, Asanae'289 teaches that to produce images with a high resolution, the volume average particle size of magnetic toners in a two-component developer is 5 to 15  $\mu\text{m}$ , preferably 5 to 12  $\mu\text{m}$ . Col. 2, lines 51-53. The particle size of 5  $\mu\text{m}$  is within the range recited in the instant claims.

It would have been obvious for a person having ordinary skill in the art, in view of teachings in Asanae'289, to adjust, through routine experimentation, the particle size of the magnetic toner recited in the claims of Application'877, such that the resulting magnetic toner has a volume average particle size of 5  $\mu\text{m}$ , and to use the resultant magnetic toner in the image forming apparatus rendered obvious over the subject matter recited in the claims of Application'877 combined with the teachings of Diamond, because that person would have had a reasonable expectation of successfully obtaining an image forming

apparatus that provides permanent black toned images with improved resolution.

19. Claim 10-12 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 09/982,877 (Application'877) in view of Oka and Diamond, Handbook of Imaging Materials, pp. 165-168.

Application'877 claims an image forming method comprising the step of developing a latent image by a developer, wherein the developer comprises a magnetic carrier and a magnetic toner comprising magnetic particles coated with carbon black. See reference claim 20.

Reference claim 20 does not require the use of a developing unit as recited in instant claim 10. However, Oka discloses a developing unit that meets the developing unit limitations recited in instant claim 10. The discussion of Oka in paragraph 11 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Oka's developing unit in the image forming method recited in claim 20 of Application'877, because that person would have had a reasonable expectation of successfully obtaining an image forming method that stably

provides images with a decrease in image density and without background contamination.

Reference claim 20 does not require that the magnetic toner comprise a binder resin as recited in the instant claims. However, the use of a binder resin in a magnetic toner is well-known in the art as shown by Diamond. The discussion of Diamond in paragraph 14 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings in Diamond, to incorporate a binder resin in the magnetic toner in the image forming method rendered obvious over the subject matter recited in claim 20 of Application'877 combined with the teachings of Oka, because that person would have had a reasonable expectation of successfully obtaining an image forming method capable of forming permanent toned images on paper or a transparency.

20. Claims 8, 30, and 39 are allowable over the prior art of record.

Claim 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The prior art of record does not teach or suggest a toner comprising a polyester binder resin having a molecular weight

distribution as recited in those instant claims, and containing a THF-insoluble component in an amount of 2 to 40 wt% of said toner.

21. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9311 (Rightfax) for after final faxes, and (703) 872-9310 for other official faxes.

Any inquiry of papers not received regarding this communication or earlier communications, or of a general nature or relating to the status of this application or proceeding should be directed should be directed to the Customer Service



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Center of Technology Center 1700 whose telephone number is  
(703) 306-5665.

JLD  
January 19, 2003

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